



THE UNIVERSITY *of* EDINBURGH

## Edinburgh Research Explorer

### Going with the flow? The endogenous/exogenous influences on gaze control in dynamic scenes

**Citation for published version:**

Smith, TJ, Mital, PK, Henderson, JM & Hill, RL 2011, Going with the flow? The endogenous/exogenous influences on gaze control in dynamic scenes. in F Vitu, E Castet & L Goffart (eds), *16th European Conference on Eye Movements Conference Abstracts*. Journal of eye movement research, Switzerland, 16th European Conference on Eye Movement (ECEM 2011), Marseilles, France, 21/08/11.  
<https://doi.org/10.16910/jemr.4.3.1>

**Digital Object Identifier (DOI):**

[10.16910/jemr.4.3.1](https://doi.org/10.16910/jemr.4.3.1)

**Link:**

[Link to publication record in Edinburgh Research Explorer](#)

**Document Version:**

Publisher's PDF, also known as Version of record

**Published In:**

16th European Conference on Eye Movements Conference Abstracts

**General rights**

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

**Take down policy**

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact [openaccess@ed.ac.uk](mailto:openaccess@ed.ac.uk) providing details, and we will remove access to the work immediately and investigate your claim.



## **Perceiving dynamic movie scenes and natural environments**

**Benjamin W. Tatler, Yoriko Hirose & Alan Kennedy**

University of Dundee, Dundee, UK

b.w.tatler@dundee.ac.uk

The role played by film and video is enormous, as a source of narrative, a means of persuasion, and as simple entertainment. Movies offer clear advantages over static images as experimental surrogates for real world viewing conditions because they capture the dynamics of natural environments. They also have the advantage of allowing for the necessary degree of control demanded by psychological experimentation. Recent models of eye movement behaviour have been derived from video-based studies and show good explanatory abilities. However, stimulus changes occur in film (indeed, they are ubiquitous) that could never occur in the real world: an editorial cut can transport the viewer instantaneously to a new location in the scene. In this talk we review evidence from our lab and others about the oculomotor and memorial consequences of editorial cuts. Both eye movement behaviour and explicit object memory show that viewpoint changes selectively impair spatial understanding of the objects in the background of the movie. Editorial cuts therefore present specific challenges for our spatial understanding of scenes, which may not be present in natural settings. We discuss the implications of these findings with regard to the similarities and differences between movie perception and perception in natural settings.

This work was funded by the Leverhulme Trust (Refs: F/00 143/O and F/00 143/J) and by the ESRC (Ref: RES 000 22 2585).

## **Going with the flow? The endogenous/exogenous influences on gaze control in dynamic scenes**

**Tim J. Smith<sup>1</sup>, Parag K. Mital<sup>2</sup>, Robin L. Hill<sup>3</sup> & John M. Henderson<sup>4</sup>**

<sup>1</sup>Birkbeck, University of London, London, UK; <sup>2</sup>Goldsmiths, University of London, London, UK; <sup>3</sup>University of Edinburgh, Edinburgh, UK; <sup>4</sup>University of South Carolina, Columbia, SC, USA

tj.smith@bbk.ac.uk

Where does one attend when viewing dynamic scenes? Unlike static scenes, the inclusion of transients such as motion and the flow of information in a dynamic scene may result in a greater exogenous control of attention but also necessitate moment-by-moment endogenous guidance in order to filter out irrelevant visual events. These factors were investigated in a series of studies recording the eye movements of participants whilst they watched a range of composed (e.g. TV and film) and naturalistic dynamic scenes under different viewing tasks. The best low-level predictor of gaze allocation during free-viewing of dynamic scenes is motion and motion contrast predicts the degree of clustering of gaze across multiple viewers. However, this bias towards motion can be overridden by viewing tasks that prioritise static features such as background, e.g. recognise the location. Gaze behaviour whilst free-viewing dynamic scenes depicting people engaged in recognisable events (e.g. doing the laundry) suggest that attention to motion may not be evidence of exogenous capture but rather a moment-by-moment interaction between motion, the semantic structure of naturalistic events and higher-order factors such as familiarity, memory and expectation.

The data presented was gathered during projects funded by the Leverhulme Trust (Ref F/00-158/BZ) and the ESRC (RES-062-23-1092).